AF/ZZU

OBLON
SPIVAK
McCLELLAND
MAIER
&
NEUSTADT
P.C.

ATTORNEYS AT LAW

ECKHARD H. KUESTERS
(703) 413-3000
EKUESTERS@OBLON.COM

CHRISTOPHER D. WARD
SENIOR ASSOCIATE
(703) 413-3000
CWARD@OBLON.COM

Docket No.: 217656US3TTC CONT

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

RE: Application Serial No.: 10/020,910
Applicants: Shigeo NAKAGAKI, et al.
2ND RCE Filing Date: February 18, 2004
For: ELEVATOR WITH DRIVE UNIT SUPPORTED BY GUIDE RAIL
Group Art Unit: 3652
Examiner: TRAN, T.

SIR:

Attached hereto for filing are the following papers:

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Our credit card payment form in the amount of **$500.00** is attached covering any required fees. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, including any fees required under 37 C.F.R 1.136 for any necessary Extension of Time to make the filing of the attached documents timely, please charge or credit the difference to our Deposit Account No. 15-0030. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 C.F.R. 1.136 for the necessary extension of time. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Eckhard H. Kuesters
Registration No. 28,870

Christopher D. Ward
Registration No. 41,367

Customer Number
22850
(703) 413-3000 (phone)
(703) 413-2220 (fax)

217656US3TTC CONT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF	:
Shigeo NAKAGAKI, et al.	: EXAMINER: TRAN, T.
SERIAL NO: 10/020,910	:
2nd RCE FILED: February 18, 2004	: GROUP ART UNIT: 3652
FOR: ELEVATOR WITH DRIVE UNIT SUPPORTED BY GUIDE RAIL	:

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

The Appellants hereby submit an appeal brief in compliance with 37 CFR 41.37 to appeal the final rejection of Claims 1-3 and 26, as set forth in the final Office Action dated November 3, 2004. The appeal brief is being submitted with the fee set forth in 37 CFR 41.20(b)(2).

I. REAL PARTY IN INTEREST

The real party in interest is Kabushiki Kaisha Toshiba of Tokyo, Japan.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF CLAIMS

Claims 4-25 have been canceled. Claims 1-3 and 26 are active, finally rejected, and appealed.

IV. STATUS OF AMENDMENTS

All amendments have been entered.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention relates to an elevator with a driving unit mounted on a guide rail for guiding the movable cage of the elevator. (Page 1, lines 9-12, and page 3, lines 12-13.)

The claimed invention includes an elevator comprising a movable unit configured to ascend and descend in an elevator shaft (page 3, lines 18-19), a guide rail configured to guide the movable unit (page 3, lines 19-20), a cable configured to hang the movable unit (page 3, lines 20-21), a driving unit mounted on the guide rail and configured to move the movable unit up and down by driving the cable (page 3, lines 21-22), and a plurality of rail support members connected to the guide rail (page 3, lines 19-20).

For example, in the non-limiting embodiment of Figures 3(a) and 3(b), a movable unit (101, depicted in Figure 1) is configured to ascend and descend in an elevator shaft (6), a guide rail (5) is configured to guide the movable unit, and a cable (103, depicted in Figure 1) is configured to hang the movable unit. (Page 8, lines 4-5 and 11-13.) A driving unit (8) is mounted on the guide rail (5) and configured to move the movable unit up and down by driving the cable (103), and a plurality of rail support members (31) are connected to the guide rail (5).

(Page 8, lines 5-8 and 14-17.)

A plurality of plates are attached to a respective rail support member (page 8, lines 5-8) where at least one plate of the plurality of plates is fixed to a wall of the elevator shaft by at least two vertically spaced lines of securing members separated from each other by an interval in a vertical direction (page 8, lines 18-20). Each line of securing members of the at least one plate includes at least one securing member satisfies an inequality defined as:

$(Wh)/(2fn) \leq L \leq (Wh)/(fn)$,

where W is a load applied to one end of the rail support members at which the guide rail is connected, h is a distance between the wall and the guide rail, f is a maximum permissible tensile strength of an uppermost of the securing members, n is the number of securing members per line of the securing members, and L is a distance of the interval. (Page 9, lines 4-6, and 20; page 10, lines 1-2 and 19-21.)

The at least one rail support member includes a U-shaped member having substantially parallel leg members each having a first end attached to the at least one plate and a second end attached to a base member. The base member is connected to the guide rail. (Page 8, lines 6-7 and 21-22.)

VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Whether Claims 1-3 and 26 are not patentable as obvious under 35 U.S.C. § 103(a) over U.S. Patent No. 5,899,301 (Aulanko et al.) in view of U.S. Patent No. 4,848,519 (Ericson et al.) and further in view of Figure 2 of the present application (Figure 2).

VII. ARGUMENT

Regarding the issue on appeal, the final Office Action combines the teachings of Aulanko et al. with the teachings of Ericson et al. and Figure 2 in order to arrive at the invention recited in Claim 1. However, the Examiner has committed reversible error in concluding the claimed invention to be obvious over the cited prior art, as there is simply no motivation to make this combination.

The final Office Action cites Aulanko et al. for the teaching of a driving unit (cited as elevator machinery 1) mounted on a guide rail (6) and configured to move a movable unit (cited as elevator car 54) up and down by driving a cable (presumably elevator rope 5). (Page 2, lines 7-8, of the Office Action dated November 3, 2004.) The final Office Action notes, however, that Aulanko et al. does not disclose specifically how the guide rail is attached to a side wall of the elevator shaft. (See, e.g., column 3, lines 59-65, of Aulanko et al.) (Page 2, lines 8-9, of the Office Action.)

Figure 2 is cited for the teaching of a guide rail being attached to a side wall by a plurality of U-shaped support members (1) and a plurality of plates attached to a respective rail support member. (Page 2, lines 10-12, of the Office Action.) The Office Action concludes that it would have been obvious to one having ordinary skill in the art at the time the invention was made to connect the guide rail system of Aulanko et al. to a side wall as shown in Figure 2 as one of the conventional ways for mounting an elevator guide rail. (Page 2, lines 13-16, of the Office Action.)

Ericson et al. is cited for the teaching of an elevator guide rail (125) installed in an elevator shaft via a plurality of rail support members wherein at least one rail support member

(cited as fixture 265) is fixed to a wall by at least two bolts separated from each other by an interval in the vertical direction. (Page 2, lines 17-19, of the Office Action.) The Office Action concludes that it would have been obvious to one having ordinary skill in the art at the time the invention was made to secure the modified guide rail system of Aulanko et al. with at least two pairs of securing members separated with each other by an interval in the vertical direction as in Ericson et al. since it was known in the art that mounting the securing members by an interval in the vertical direction would prevent the support members from bending due to the total vertical load of the driving unit and the movable unit. (Page 2, line 22, through page 3, line 1, of the Office Action.)

Furthermore, the inequality relationship defined in Claim 1 was concluded to be the mere discovery of an optimum or workable range involving only routine skill in the art. (Page 3, lines 3-7, of the Office Action.)

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. (See M.P.E.P. §2143.) Appellants submit that no motivation existed at the time of the invention to combine the reference teachings of Aulanko et al., Figure 2, and Ericson et al. as contemplated in the final rejection.

1. There is no motivation to combine the teachings of Aulanko et al. with Figure 2 and Ericson et al. to arrive at the invention recited in Claims 1-3 and 26

The primary reference, Aulanko et al., describes a configuration in which elevator machinery with a disc type motor is mounted on one of the guide rails of the elevator car. (Abstract, lines 1-2.)

The Appellants begin by noting that elevator systems in which a drive unit for the elevator is mounted to a structure other than the guide rail is significantly different than a configuration in which a drive unit is mounted to the guide rail. These two different configurations provide drastically different force/weight issues for the components of the systems.

In the case of an elevator in which the drive unit is arranged in a machinery chamber rather than being mounted on a guide rail, usually only the elevator's own weight acts on the guide rail in the lengthwise direction of the guide rail (i.e., the vertical direction), excluding special cases such as emergency stops. Also, in such systems, the lowermost end of the guide rail is typically supported by the floor of the pit, and thus the weight of the guide rail is supported by the floor. In such mounting configurations, it suffices for the guide rail to be capable of withstanding force in the horizontal direction so that is does not tip over. In such mounting configurations, a large bending moment is not generated at the regions where the guide rail is fixed to the elevator shaft.

However, in the case of an elevator where the drive unit is fixed to the guide rail, an extremely large load (W)(the so-called "sheave shaft load," which can include, for example, the weight of the hoist machine and/or the weight of the passenger cage, the weight of the objects loaded within the passenger cage, and the weight of the counterweight) acts on the guide rail in

the vertical direction. Accompanying the sheave shaft load (W), a large load (Fb) in the vertical directions acts on the tip of the mounting elements used to mount the guide rail to the shaft wall.

Also, in elevators where the drive unit is mounted to the guide rail, space is needed for installing the drive unit between the guide rail and shaft wall. Accordingly, a distance (h) between the guide rail and the wall of the elevator shaft wall is larger than in a configuration in which the drive unit is not mounted to the guide rail.

Thus, the inventors identified the following two features that are characteristic of an elevator where the drive unit is mounted to the guide rail: (1) a large load (Fb) in the vertical direction acts on the guide rail mounting element; and (2) a prescribed distance (h) is required between the guide rail and the wall of the elevator shaft (ascending/descending path). Accordingly, a large bending moment (Fb x h) is therefore generated in the region where the mounting element is fixed to the wall of the elevator shaft (ascending/descending path), resulting in large moments at the securing members.

The Aulanko et al. reference is cited for the teaching of elevator machinery (1) with a disc-type motor mounted on a guide rail (6) of the elevator car or counterweight. The Official Action notes, however, that the Aulanko et al. reference does not disclose specifically how the guide rail is attached to the side wall of the hoistway.

The Office Action combines the teachings of Figure 2 and Ericson et al. with the teaching in Aulanko et al. However, both Figure 2 and Ericson et al. describe elevator configurations in which a drive unit is not mounted on a guide rail. The Appellants respectfully submit that one of skill in the art at the time of the invention would not have looked to the teachings in Figure 2 and Ericson et al. for mounting configurations for the guide rail in

Aulanko et al., since Aulanko et al. describes a drive unit mounted on a guide rail and thus puts significantly increased loads and stresses on the guide rail as compared to the systems in Figure 2 and Ericson et al.

The Appellants, therefore, respectfully submit that the rejection is based on the improper application of hindsight considerations. It is well settled that it is impermissible simply to engage in hindsight reconstruction of the claimed invention, using Appellants' structure as a template and selecting elements from the references to fill in the gaps. *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991). Simplicity and hindsight are not proper criteria for resolving obviousness. *In re Warner*, 397 F.2d 1011, 154 USPQ 173 (CCPA 1967).

Figure 2 of the present application is cited for the teaching of a manner of mounting the guide rail to the wall of the elevator shaft. The configuration in Figure 2 does not teach the mounting of a driving unit on the guide rail. Thus, one of ordinary skill in the art would not have looked to this reference for the teaching of a mounting system capable of mounting a guide rail upon which a drive unit is mounted, since it is unclear whether the configuration of Figure 2 could support the loads present in such a system.

Ericson et al. describes a structural support that is specifically designed for a short rise hydraulic elevator. (See, column 1, lines 19-20.) The hydraulic jacks symmetrically support the car frame by being centrally disposed, thereby allowing for the use of smaller rails, since only minimal rail reactions are encountered. (Column 6, lines 22-24, column 5, lines 19-24, and see column 1, lines 56, through column 2, line 1.) The guide rails (125) are included to provide lateral stability to the car. (See, column 3, line 67, through column 4, line 4.) In fact, in the embodiment of Figures 5 and 6, the lower portion of the guide rails (125) are eliminated

and replaced by a guide shoe with a U-shaped bracket (305) on the car platform that maintains the lateral stability of the car at lower position by engagement with the jack cylinders (200). (Column 5, line 64, though column 6, line 11.) Thus, it is evident from a review of Ericson et al. that the guide rails (125) do not carry the weight of features other than themselves, but rather are intended to maintain the lateral stability of the elevator.

Thus, one of ordinary skill in the art would not have looked to this reference for the teaching of a mounting system capable of mounting a guide rail upon which a drive unit is mounted, since it is unclear whether the configuration of Ericson et al. could support the loads present in such a system.

Additionally, it is noted that the guide rails of Ericson et al. are mounted in several different manners. The lower portions of the guide rails (125) in Figure 1 are fixed to the wall by mounting brackets (275) by bolts in a horizontal row. The upper end of the near-side guide rail (125) of Figure 1 is fixed to the wall by a bracket that has two mounting holes in a horizontal row. Fixture (265) is the only feature that appears to include mounting holes that are in two rows. The fixture (265) carries clamps (260) used to mount the guide rail (125). The fixture (265) also carries a leveling switch (150). Since the fixture (265) includes not only clamps (260), but also the leveling switch (150), the size of the fixture is larger than the bracket used to fix the upper end of the near-side the guide rail to the wall. It appears logical that the addition of a second row of bolts to the fixture (265) is a result of the larger size of the fixture, rather than a need to increase the vertical support of the guide rail, since (i) if this were the case, then both guide rails would need the same vertical support and the same fixture (265), which is not the case here, and (ii) the guide rails are provided for lateral stability, not vertical support. Thus, one of ordinary skill in the art would not have viewed the fixture (265) as being

particularly well suited for vertical support of large loads.

Furthermore, the Appellants submit that Aulanko et al. fails to appreciate the need for increased strength or support for a guide rail upon which a drive unit is mounted, and thus does not teach one of skill in the art a need for a specialized mounting for the guide rail. Aulanko et al. indicates that guide rails are designed to receive large vertical forces generated by the action of safety gears of the elevator, thus Aulanko et al. teaches that the guide rails for a system in which elevator machinery is mounted on the guide rail does not require more structural strength and dimensioning than a system in which the elevator machinery is installed in a machine room. (Column 1, lines 56-64.) It is noted that the mounting structure of the guide rail and the cable and pulley arrangements depicted in Figures 4 and 5 of Aulanko et al. provide significantly different force/weight configurations than a configuration in which a driving unit is mounted to a guide rail and the guide rail is mounted to a wall of the elevator shaft in the manner recited in Claim 1. Thus, it is unclear whether Aulanko et al. even provides one of ordinary skill in the art with the same problems that are solved by using the mounting configuration of the present invention. Therefore, the Appellants submit that Aulanko et al. does not provide one of ordinary skill in the art with a motivation to modify Aulanko et al. to arrive at the present invention.

The present invention as recited in Claim 1 provides significant advantages that were not contemplated by the cited references. The Appellants respectfully submit that Ericson et al. and Figure 2 of the present application should not be combined with Aulanko et al., since Ericson et al. and Figure 2 are directed to distinctly different configurations in which the drive unit is not fixed to the guide rail, and thus one of ordinary skill in the art would not have looked

to these references to solve the problem of how to mount the guide rail of Aulanko et al. to the wall of the elevator shaft.

The present invention advantageously provides a configuration for mounting a guide rail upon which a drive unit is mounted by fixing a plate to a wall of the elevator shaft "by at least two vertically spaced lines of securing members separated from each other by an interval in a vertical direction," as recited in Claim 1. The characteristic feature of the present invention does not lie in employing a plurality of securing members, but rather in arranging these in separated fashion in the vertical direction, so that the bending moment that acts thereon can be supported by axial force of the anchor bolts.

A comparison of the stress that is generated in the securing members in the case in which these are not arranged in separated fashion in the vertical direction (i.e. the comparative construction) and the case in which these are arranged is separated fashion in the vertical direction (construction of the present invention) results in dramatically different stresses on the securing members of these two configurations. In the exemplary calculation submitted in an Appendix attached to the Request For Consideration filed on August 2, 2004, the Appellants noted that a comparison between these two configurations resulted in stresses on the securing member of the comparative construction being 24 times greater than the stresses on the securing members in the exemplary construction of the present invention.

Thus, by arranging the securing members in a separated fashion in the vertical direction, so that the bending moment acting thereon is borne by the axial force of the securing member, then the stress that is generated in the securing members is reduced by a factor of about 1/24 (when d = 10, L = 30). Although the number of securing members is doubled, the stress that is generated therein can be reduced by a factor of about 1/24, so an extremely large benefit in

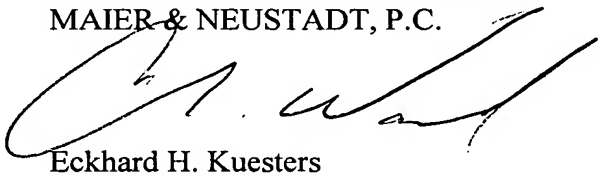
terms of reduction in stress can be obtained compared with the amount of increase in the number of anchor bolts.

None of the cited reference teaches or suggests such an advantageous combination of features.

Appellant therefore respectfully submits that all of the claims are patentable, and so requests that the final rejection be REVERSED.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Eckhard H. Kuesters
Attorney of Record
Registration No. 28,870

Christopher D. Ward
Registration No. 41,367

Customer Number
22850

Tel. (703) 413-3000
Fax. (703) 413-2220
(OSMMN 10/01)

EHK:CDW:brf
I:\atty\cdw\21xxxx\217656US3 CONT\AppealBrief.doc

CLAIMS APPENDIX

1. (Previously Presented) An elevator comprising:

a movable unit configured to ascend and descend in an elevator shaft;

a guide rail configured to guide said movable unit;

a cable configured to hang said movable unit;

a driving unit mounted on said guide rail and configured to move said movable unit up and down by driving said cable;

a plurality of rail support members connected to said guide rail; and

a plurality of plates attached to a respective rail support member of said plurality of rail support members,

wherein at least one plate of said plurality of plates is fixed to a wall of said elevator shaft by at least two vertically spaced lines of securing members separated from each other by an interval in a vertical direction, and

wherein each line of securing members of said at least one plate includes at least one securing member that satisfies an inequality defined as:

$(Wh)/(2fn) \leq L \leq (Wh)/(fn)$,

where W is a load applied to one end of said rail support members at which said guide rail is connected, h is a distance between said wall and said guide rail, f is a maximum permissible tensile strength of an uppermost of said securing members, n is the number of securing members per line of said securing members, and L is a distance of said interval, and

wherein at least one rail support member of said plurality of rail support members includes a U-shaped member having substantially parallel leg members each having a first end

attached to said at least one plate and a second end attached to a base member, said base member being connected to said guide rail.

2. (Previously Presented) The elevator as recited in claim 1, wherein:

said at least one plate is adjacent to said driving unit.

3. (Original) The elevator as recited in claim 1 or 2, wherein said securing members comprise upper and lower pairs of anchor bolts, each pair of said anchor bolts being separated by an interval in the horizontal direction.

4.-25. (Canceled)

26. (Previously Presented) The elevator as recited in claim 1, wherein said securing members comprise a pair of lines of anchor bolts, each line including a pair of anchor bolts separated by an interval in the horizontal direction.